

## **BERKELEY LAB'S FLEXLAB™ EMPOWERS GENENTECH TO CUT ENERGY WASTE AND BOOST EMPLOYEE COMFORT**

The biotech company Genentech is cutting the ribbon on a new building designed to maximize energy efficiency and employee comfort, thanks to some help from FLEXLAB at Berkeley Lab.

FLEXLAB provides a facility for testing and optimizing building systems under real-world conditions, allowing Genentech to make the best possible choices for its new 255,000-square-foot office building. Armed with a series of data-based recommendations, Genentech made informed decisions about equipping and operating the building to save energy and money while maximizing employee comfort.

“At Genentech, our business is built on innovation and science. So we were excited to apply an innovative scientific approach to energy efficiency and building optimization,” said Carla Boragno, Genentech’s vice president for site services.

FLEXLAB is designed to unlock the kind of whole-building energy savings that will be needed if California and the nation are to meet ambitious energy and emissions goals.

“Buildings eat up about two-thirds of the electricity used in the United States, costing Americans some \$400 billion a year,” said Ramamoorthy Ramesh, Berkeley Lab’s associate laboratory director for energy technologies. “By tackling building efficiency on a large scale, FLEXLAB will help the nation save energy and money, cut pollution and tackle climate change – making us more competitive.”

For FLEXLAB's first commercial experiment, Webcor Builders built and equipped Genentech's office space – including furniture, façade systems, flooring and ceiling systems – on FLEXLAB's large-scale rotating test bed. With decisions on lighting and shading systems to be made, FLEXLAB ran comparison tests on different options, rotating the test bed to determine how sunlight hitting different sides of the building would affect room temperature and visual comfort. High-tech sensors captured data on how each system performed.

“FLEXLAB can really help to right size the design and right size the investment,” said Andrew Keller, senior principal campus site planner at Genentech. “And, ultimately, it can confirm the performance of every single element within the building. It's a holistic approach.”

But with FLEXLAB, Genentech had experiment results it could take to the bank. Testing showed that one of the automated shading control options did the best job of minimizing glare while providing insulation and a view. And lighting experiments helped refine the lighting control system to maximize savings from dimming in response to daylight.

The experiment uncovered a simple way to save substantial energy on lighting by setting controls so that shades would not close all the way, but instead stay open a few inches above the sill. It revealed a way to adjust the dimming controls to reduce the energy used for lighting by 60 percent in open areas. And it showed Genentech how to position workstations to minimize glare. Since the building is designed for flexible workspace, with no permanent desks, all workstations have to be comfortable for a range of employees, and lighting and temperature are especially important.

“Each day our employees come to work to find medical solutions to serious human needs,” said Genentech's Boragno. “If we can provide a better place for them to work—an environment that helps make great work possible—that's a good thing for our patients. And if we can have a building that reduces our environmental impact, that's good for everybody.”

Once the FLEXLAB tests helped Genentech decide which lighting and shading systems to use, operations, maintenance and commissioning staff took them for a test drive, working out the bugs before installing them in the new building. Webcor committed to fine-tuning the building commissioning for an entire month, as opposed to one-time installation. This allowed Webcor to verify performance of lighting, HVAC and energy-saving technologies against FLEXLAB data, and correct course where necessary.

As a result of working at FLEXLAB, Genentech was able to take back typically unusable perimeter space and maximize its use of available floor space through shading and HVAC improvements, which ensure comfortable temperatures and lighting, even at workstations pulled right up to the windows.

“This was FLEXLAB’s first commercial experiment. We got involved late in the building planning process, and the results are just the tip of the iceberg in terms of what FLEXLAB can do for users,” said Cindy Regnier, executive manager of FLEXLAB. “FLEXLAB allows architects, builders, owners and others to take a whole-building approach and uncover new ways to design buildings and integrate systems for maximum performance. FLEXLAB takes energy efficiency to a whole new level.” For more information, including photos and videos, go to [flexlab.lbl.gov](http://flexlab.lbl.gov).

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